



## Toward a quantitative estimate of future heat wave mortality under global climate change

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### Abstract:

**BACKGROUND:** Climate change is anticipated to affect human health by changing the distribution of known risk factors. Heat waves have had debilitating effects on human mortality, and global climate models predict an increase in the frequency and severity of heat waves. The extent to which climate change will harm human health through changes in the distribution of heat waves and the sources of uncertainty in estimating these effects have not been studied extensively. **OBJECTIVES:** We estimated the future excess mortality attributable to heat waves under global climate change for a major U.S. city. **METHODS:** We used a database comprising daily data from 1987 through 2005 on mortality from all nonaccidental causes, ambient levels of particulate matter and ozone, temperature, and dew point temperature for the city of Chicago, Illinois. We estimated the associations between heat waves and mortality in Chicago using Poisson regression models. **RESULTS:** Under three different climate change scenarios for 2081-2100 and in the absence of adaptation, the city of Chicago could experience between 166 and 2,217 excess deaths per year attributable to heat waves, based on estimates from seven global climate models. We noted considerable variability in the projections of annual heat wave mortality; the largest source of variation was the choice of climate model. **CONCLUSIONS:** The impact of future heat waves on human health will likely be profound, and significant gains can be expected by lowering future carbon dioxide emissions.

**Source:** <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3094424>

### Resource Description

#### Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES), Other Climate Scenario

**Special Report on Emissions Scenarios (SRES) Scenario:** SRES A1, SRES A2, SRES B1

**Other Climate Scenario:** SRES A1B

#### Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Temperature

**Air Pollution:** Ozone, Particulate Matter

# Climate Change and Human Health Literature Portal

**Temperature:** Extreme Heat

**Geographic Feature:** 

resource focuses on specific type of geography

Freshwater, Urban

**Geographic Location:** 

resource focuses on specific location

United States

**Health Impact:** 

specification of health effect or disease related to climate change exposure

Morbidity/Mortality

**Model/Methodology:** 

type of model used or methodology development is a focus of resource

Exposure Change Prediction, Outcome Change Prediction

**Resource Type:** 

format or standard characteristic of resource

Research Article

**Timescale:** 

time period studied

Long-Term (>50 years)